National Institute of Environmental Health Sciences

Weather variables and Japanese encephalitis in the metropolitan area of Jinan City, China

Author(s): Bi P, Zhang Y, Parton KA
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Abstract:

OBJECTIVE: To identify weather-related risk factors and their roles in Japanese encephalitis transmission and to provide policy implications for local health authorities and communities. METHODS: Data on notified cases of Japanese encephalitis and weather variables over the period 1959-1979 were collected from Jinan city, a temperate city in China. Due to seasonality of the disease, the data analysis was restricted to five months from June to October each year. Spearman correlation analysis and time-series adjusted Poisson regression analysis were performed to quantify the relationship between weather and the number of cases. The Hockey Stick model was used to detect potential threshold temperatures. RESULTS: Monthly mean maximum and minimum temperatures, monthly total rainfall and monthly mean relative humidity were positively correlated to monthly notification of Japanese encephalitis, while monthly mean air pressure was inversely correlated. Lag times varied from one to two months. All these weather variables were significant in the adjusted Poisson regression model. Thresholds of 25.2 degrees C for maximum temperature and 21.0 degrees C for minimum temperature were also detected. CONCLUSIONS: Weather variables could have affected the transmission of Japanese encephalitis in this urban area of China. Public health interventions should be developed at this stage to reduce future risks related to climate change.

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Resource Description

Early Warning System: ☑

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure : ☑

weather or climate related pathway by which climate change affects health

Ecosystem Changes, Meteorological Factors, Meteorological Factors, Precipitation, Temperature

Temperature: Fluctuations

Geographic Feature: ☑

resource focuses on specific type of geography

Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Vectorborne Disease

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Viral Encephalitis

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Short-Term (

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content